



ESP CASE DETECTION ALGORITHM

Diabetes, Type 1 and 2

Document Version 1.2

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Modification History

Version	Date	Modification	By
1.2	10/11/2017	Added ESP Logo and MDPH branding	DPM
1.1	7/5/2016	Placed onto new algorithm template	DPM
1.0	5/29/2014	Initial draft	



1. Overview

The purpose of this document is to describe the criteria used to identify Diabetes, Type 1 and 2 in MDPHnet data.

2. Criteria used to identify cases using ESP data

I. CASE CRITERIA

Criteria for frank diabetes

Any one of the following:

1. Hemoglobin A1C \geq 6.5
2. Fasting glucose (FG) \geq 126
3. Random glucoses (RG) \geq 200 on two or more occasions
4. Prescription for INSULIN outside of pregnancy
5. ICD9 code for diabetes 250.x or ICD10 code (E10*, E11*, or E14*) on two or more occasions
6. Prescription for any of the following medications:
 - GLYBURIDE, GLICLAZIDE, GLIPIZIDE, GLIMEPIRIDE
 - PIOGLITAZONE, ROSIGLITAZONE
 - REPAGLINIDE, NATEGLINIDE, MEGLITINIDE
 - SITAGLIPTIN
 - EXENATIDE, PRAMLINTIDE

Classify patient as Type 1 or Type 2 Diabetes

Amongst patients meeting the definition for frank diabetes, define as type 1 if any of the following:

1. C-peptide test $<$ 0.8
2. Diabetes auto-antibodies positive
3. Prescription for URINE ACETONE TEST STRIPS (search on keyword: ACETONE)
4. Ratio of type 1: type 2 ICD9 or ICD10 codes $>$ 50% and prescription for GLUCAGON
5. Ratio of type 1: type 2 ICD9 or ICD10 codes $>$ 50% and never prescribed oral hypoglycemic medications

If patient does not meet any of the above criteria for type 1 diabetes then classify as type 2 diabetes.

II. ICD-9/ICD-10 CODES FOR CASE CRITERIA

Diabetes	ICD-9	250.x1	Diabetes mellitus
		250.x3	Diabetes with other coma
	ICD-10	E10	Type 1 diabetes mellitus
		E11	Type 2 diabetes mellitus
		E14	Unspecified diabetes mellitus



III. MEDICATIONS FOR CASE CRITERIA

Metformin
Glyburide, Gliclazide, Glipizide, Glimepiride
Pioglitazone, Rosiglitazone
Repaglinide, Nateglinide, Meglitinide
Sitagliptin
Exenatide, Pramlintide
Miglitol

IV. LAB TESTS AND OTHER FOR CASE CRITERIA

Urine ketone test strips*

KETONE STRIP MC (URINE ACETONE TEST,STRIPS)
CHEMSTRIP K TEST (URINE ACETONE TEST,STRIPS)
KETOSTIX REAGENT STRIP MC (URINE ACETONE TEST,STRIPS)

* use keywords KETONE and ACETONE

Lab tests

Category	Lab name	Code	Positive
DM-ANTIBODIES	GAD-65 AB	83519-- 3571	>1.0
DM-ANTIBODIES	ICA-512 AUTOANTIBODIES	86341-- 7163	>0.8
DM-ANTIBODIES	ISLET CELL ANTIBODY SCREEN	86341-- 3421	POSITIVE or titre greater than 1:4
DM-ANTIBODIES	ISLET CELL ANTIBODY TITER	86341-- 3422	≥1.25
DM-ANTIBODIES	INSULIN AUTO ANTIBODY	86337-- 2491	≥0.4
DM-ANTIBODIES	INSULIN AB	N1892-- 1655	>0.8
C-PEPTIDE	C-PEPTIDE, PLASMA	84681-- 1245	>1
C-PEPTIDE	C-PEPTIDE	84681-- 5497	>1

V. VALIDATION FILE

Linelist of patients. Include all patients with any of the following:

1. One or more instance of a diabetes ICD9 or ICD10 code
2. Prescription for INSULIN, METFORMIN, or any of the oral hypoglycemics above



3. Hemoglobin A1C ≥ 6.5
4. Fasting glucose (FG) ≥ 126
5. Random glucoses (RG) ≥ 200 on two or more occasions

Include the following fields for all patients:

1. DB number
2. MRN
3. DOB
4. Sex
5. Race / ethnicity
6. Zip code
7. Date of death
8. Diabetes type (1, 2, non-diabetic)
 - o non-diabetic: patient only has 1 ICD9 or ICD10 code for diabetes or a prescription for metformin alone or a prescription for insulin during pregnancy alone and does not meet any other criteria
9. Condition_date (date patient first met criteria for diabetes)
10. Pregnancy (EDC1, EDC2, EDC3 if multiple pregnancies)
11. Maximum BMI in 2006, 2007, 2008, 2009, 2010
12. Maximum A1C in 2006, 2007, 2008, 2009, 2010
13. Maximum FASTING GLUCOSE in 2006, 2007, 2008, 2009, 2010 (glucose-fasting, ogtt50 fasting, ogtt75 fasting, ogtt100 fasting)
14. Two highest random glucoses
15. Maximum CHOLESTEROL in 2006, 2007, 2008, 2009, 2010
16. Maximum HDL in 2006, 2007, 2008, 2009, 2010
17. Minimum HDL in 2006, 2007, 2008, 2009, 2010
18. Maximum LDL in 2006, 2007, 2008, 2009, 2010
19. Maximum TRIGLYCERIDES in 2006, 2007, 2008, 2009, 2010
20. Average systolic blood pressure in 2006, 2007, 2008, 2009, 2010
21. Average diastolic blood pressure in 2006, 2007, 2008, 2009, 2010
22. Total number of occurrences of 250.xx
23. Total number of occurrences of ICD9 250.x0
24. Total number of occurrences of ICD9 250.x1
25. Total number of occurrences of ICD9 250.x2
26. Total number of occurrences of ICD9 250.x3
27. Total number of occurrences of ICD10 E10*
28. Total number of occurrences of ICD10 E11*
29. Total number of occurrences of ICD10 E12*
30. Total number of occurrences of ICD10 E13*
31. Total number of occurrences of ICD10 E14*
32. Most recent occurrence of ICD9 648.8 or O24.4 (date)
33. DM-ANTIBODIES test (result)
34. C-PEPTIDE test (result)
35. Prescription for one of the following medications (yes, no, most recent data)? Create unique field for each medication:
 - o INSULIN
 - o GLYBURIDE
 - o GLICLAZIDE



- GLIPIZIDE
- GLIMEPIRIDE
- METFORMIN
- ACARBOSE
- MIGLITOL
- PIOGLITAZONE
- ROSIGLITAZONE
- REPAGLINIDE
- NATEGLINIDE
- MEGLITINIDE
- SITAGLIPTIN
- EXENATIDE
- PRAMLINTIDE

Need to adjust the fasting glucose positive threshold to ≥ 155 if patient pregnant (i.e. fasting glucose a component of OGTT50 or 100)